1. A method of bounding latency of transmissions by stations on a shared access medium comprising:

associating one of multiple priority levels with a transmission; and

controlling the amount of time the transmission occupies the shared access medium based on the associated priority level.

2. The method of claim 1, wherein controlling comprises:

maintaining a frame length limit for all but the highest of the multiple priority levels;

determining if the associated priority level is not the highest; and

if the associated priority level is not the highest, ensuring that the length of a frame to be transmitted in the transmission does not exceed the frame length limit.

3. The method of claim 1, wherein controlling comprises:

maintaining a frame length limit for all of the multiple priority levels; and

ensuring that the length of a frame to be transmitted in the transmission does not exceed the frame length limit.

4. The method of claim 1, wherein the transmission is a burst transmission of frames and wherein controlling comprises:

providing the burst transmission with control of the medium at the associated priority level.

5. The method of claim 4, wherein providing comprises: providing in all but the last of the frames in the burst transmission a contention control indicator for indicating contention-free access and providing in all of the frames in the burst transmission the associated priority level so that the burst transmission may be interrupted by another of the stations having a pending frame with a higher priority level than the associated priority level.

6. The method of claim 5, further comprising:

relinquishing control of the shared access medium when such pending frame is detected between transmissions of the frames in the burst transmission.

7. The method of claim 6, further comprising:

resuming the burst transmission after successfully contending for access to the shared access medium.

8. The method of claim 5, wherein the frames of the burst transmission comprise segments of a segmented MAC service data unit.

9. A media access control unit for bounding latency of transmissions by stations on a shared access medium comprising:

a transmit handler to associate one of multiple priority levels with a transmission and to control the amount of time the transmission occupies the shared access medium based on the associated priority level.

10. The media access control unit of claim 9, wherein the transmit handler maintains a frame length limit for all but the highest of the multiple priority levels and ensures that the length of a frame to be transmitted in the transmission does not exceed the frame length limit when the associated priority level is not the highest.

11. The media access control unit of claim 9, wherein the transmit handler maintains a frame length limit for all of the priority levels and ensures that the length of a frame to be transmitted in the transmission does not exceed the frame length limit.

12. The media access control unit of claim 9, wherein the transmission is a burst transmission and the transmit handler comprises:

a segmentation unit for segmenting a MAC service data unit into segments for transmission in frames on the shared access medium in the burst transmission; and

a frame transmit unit for providing segments in frames in the burst transmission at the associated priority level.

13. The medial access control unit of claim 12, wherein the frame transmit unit provides a set contention control indicator for indicating contention-free access in all but the

last of the frames in the burst transmission and provides in all of the frames in the burst transmission the associated priority level so that the burst transmission may be interrupted by another of the stations having a pending frame with a higher priority level than the specified priority level.

14. The media access control apparatus of claim 13, further comprising:

wherein the frame transmit unit relinquishes control of the shared access medium when such pending frame is detected between transmissions of the frames in the burst transmission.

15. The media access control apparatus of claim 14, further comprising:

wherein the frame transmit unit resumes the burst transmission after successfully contending for access to the shared access medium.